EXHIBIT B

Infringement Chart for US 6,549,988 vs. Cisco

Claim 1

Claim Language	Cisco Evidence
1. A computer suitable for use in a data storage system comprising a network interconnecting a plurality of such computers, the computer comprising	Cisco UCS S3260 is a computer (server) that suitable for use in a data storage system, Product overview The Cisco UCS® S3260 Storage Server (Figure 1) is a modular, high-density, high-availability, dual-node storage- optimized server well suited for service providers, enterprises, and industry-specific environments. It provides dense, cost-effective storage to address your ever-growing data needs. Designed for a new class of data-intensive workloads, it is simple to deploy and excellent for applications for big data, data protection, software-defined storage environments, scale-out unstructured data repositories, media streaming, and content distribution. Figure 1. Cisco UCS S3260 Storage Server

Figure 2.
Cisco UCS S3260 Empty Chassis

Figure 3.
Cisco UCS S3260 Chassis with 2 M5 Server Nodes

Cisco UCS S3260 Storage Server datasheet (Page 4)
Source: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/datasheet-c78-738059.pdf

	Cisco UCS S3260 Storage Server datasheet (Page 3) Source: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/datasheet-c78-738059.pdf the data storage system comprising a network interconnecting a plurality of such computers (Server nodes) ## Overview of the Cisco UCS C-Series Rack-Mount Server The Cisco UCS 3260 is a modular, dense storage server with dual M3 or M4 or M5 server nodes, optimized for large datasets used in environments such as big data, cloud, object storage, and content delivery. The UCS 3260 chassis is a modular architecture consisting of the following modules: Cisco UCS C-Series Integrated Management Controller GUI Configuration Guide for S3260 Storage Servers, Release 3.0 (Page 1) Source: https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/sw/gui/config/guide/3_0/b_Cisco_UCS_C-Series_GUI_Configuration_Guide_for_C3x60_Servers_301.pdf
an I/O channel adapter for accepting an incoming I/O request from a host;	Cisco UCS S3260 comprises an I/O channel (Fibre Channel) for accepting an incoming I/O request from a host

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Product highlights

- Dual 2-socket server nodes based on 2nd Gen Intel Xeon Scalable processors with up to 48 cores per server node

- Up to 1.5 TB of DDR4 memory per M5 server node and up to 1 TB of Intel Optane™ DC Persistent Memory

- Support for high-performance Nonvolatile Memory Express (NVMe) and flash memory

- Massive 1,080-TB data storage capacity that easily scales to petabytes with Cisco UCS Manager software

- Policy-based storage management framework for zero-touch capacity on demand

- Dual-port 40-Gbps system I/O controllers with a Cisco UCS Virtual Interface Card 1300 platform embedded chip or PCIe-based system I/O controller for Quad Port 10/25G Cisco VIC 1455 or Dual Port 40/100G Cisco VIC 1495 or 3rd party PCIe adapters

- Unified I/O for Ethernet or Fibre Channel to existing NAS or SAN storage environments

- Support for Cisco bidirectional transceivers, with 40-Gbps connectivity over existing 10-Gbps cabling infrastructure

Cisco UCS S3260 Storage Server datasheet (Page 3)
Source: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/datasheet-c78-738059.pdf

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Table 1.   Product specifications

Item	Description
Chassis	4RU server
Server nodes	Up to 2 nodes; • M5 server nodes based on 2nd Gen Intel Xeon Scalable and Intel Xeon Scalable processors
Processors	Dual 2nd Gen Intel Xeon Scalable processors per server node • M5 server node processors: 4214, 5218, 5220, 6238, 6240, 6262V, 4210R, 4214R, 5218R, 5220R, 6226R, 6230R
Processor cores	Up to 48 per server node
Memory	M5 server node: 7 Dual In-Line Memory Module (DIMM) slots per processors with 16-GB, 32-GB, 64-GB, or 128-GB DDR4 registered DIMMs (RDIMMs) or Load-Reduced DIMMs (LRDIMMs). 1 Intel Optane DC Persistent Memory Ready Slot with 256-GB or 512-GB.
NVMe	Up to 12.8 TB NVMe for M5 server node
System I/O controllers	Up to 2 system I/O controllers. Choice of • Onboard Cisco UCS Virtual Interface Card 1300 platform and 2 x 40-Gbps Quad Small Form-factor Pluggable (QSFP) ports (160 Gbps of throughput) • PCIe Slot based with choice of Cisco UCS VIC 1455 Quad Port 10/25G, Cisco UCS VIC 1495 Dual Port 40/100G, or third-party Ethernet and FC Adapters
I/O expansion module	• Dual x8 Peripheral Component Interconnect Express (PCIe) half-height, half-width slots for third-party add-in cards. (**Note:** Available with M5 and M4 server node; uses server bay 1.) • Choice of I/O Ethernet and Fibre Channel options: ◦ 1, 10 or 40 Gigabit Ethernet or 16-Gbps Fibre Channel • NVMe SSD options of 1.6-, 3.2-, or 6.4-TB • Application acceleration with support for NVIDIA T4 16GB GPU

Cisco UCS S3260 Storage Server datasheet (Page 5)
Source: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/datasheet-c78-738059.pdf

	Cisco UCS S3260 comprises I/O channel adapter (FC Host Bus Adapter)
	
	Fiber Channel protocol provides the infrastructure to encapsulate the SCSI traffic and <mark>provided connectivity between computers and storage</mark>. FC operates at speeds of 2, 4, 8, and 16 Gbps.
	
	• **Fiber Channel (FC)** consists of the following:
	
	    • Hard disk arrays that provide raw storage capacity.
	
	    • Storage processors to manage hard disks and provide storage LUNs and masking for the servers.
	
	    • Fiber Channel Switches (also known as Fabric) that provide connectivity between storage processors and server HBAs.
	
	    • <mark>Fiber Channel Host Bus Adapters:</mark> They are installed in the computer and provide connectivity to the SAN.
	
	Cisco UCS Manager Storage Management Guide, Release 4.0 (page 6)
	https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/ucs-manager/GUI-User-Guides/Storage-Mgmt/4-0/b_UCSM_GUI_Storage_Management_Guide_4_0.pdf

configuration manager software for enabling said I/O channel adapter to decide whether (i) to route said request to cache, (ii) to route said request to disk, or (iii) to reject said request;	Cisco UCS S3260 comprises configuration manager software (cache mode, cache policy) software for enabling said I/O channel adapter to decide whether (i) to route said request to cache ((readwrite) enabled), (ii) to route said request to disk, (None (disabled)) (iii) to reject said request (Blocked) **Step 6** In the **Virtual Drive Properties** area, update the following properties: <table><tr><th>Name</th><th>Description</th></tr><tr><td>**Virtual Drive Name** field</td><td>The name of the new virtual drive you want to create.</td></tr><tr><td>**Read Policy** drop-down list</td><td>The read-ahead <mark>cache mode.</mark></td></tr><tr><td>**Cache Policy** drop-down list</td><td>The <mark>cache policy</mark> used for buffering reads.</td></tr><tr><td>**Strip Size** drop-down list</td><td>The size of each strip, in KB.</td></tr></table>

Cisco UCS C-Series Integrated Management Controller GUI Configuration Guide for S3260 Storage Servers, Release 3.0 (190)
Source:
https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/sw/gui/config/guide/3_0/b_Cisco_UCS_C-Series_GUI_Configuration_Guide_for_C3x60_Servers_301.pdf

Name	Description
Write Policy drop-down list	This can be one of the following • **Write Through**— Data is written through the cache and to the physical drives. Performance is improved, because subsequent reads of that data can be satisfied from the cache. • **Write Back**— Data is stored in the cache, and is only written to the physical drives when space in the cache is needed. Virtual drives requesting this policy fall back to **Write Through** caching when the BBU cannot guarantee the safety of the cache in the event of a power failure. • **Write Back Bad BBU**—With this policy, write caching remains **Write Back** even if the battery backup unit is defective or discharged.
Disk Cache Policy drop-down list	This can be one of the following • **Unchanged**— The disk cache policy is unchanged. • **Enabled**— Allows IO caching on the disk. • **Disabled**— Disallows disk caching.
Access Policy drop-down list	This can be one of the following • **Read Write**— Enables host to perform read-write on the VD. • **Read Only**— Host can only read from the VD. • **Blocked**— Host can neither read nor write to the VD.

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	Cisco UCS C-Series Integrated Management Controller GUI Configuration Guide for S3260 Storage Servers, Release 3.0 (191) Source: https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/sw/gui/config/guide/3_0/b_Cisco_UCS_C-Series_GUI_Configuration_Guide_for_C3x60_Servers_301.pdf
a network adapter for handling network control traffic;	Cisco UCS S3260 comprises Unified I/O for Ethernet for network traffic(Ethernet) Product highlights • Dual 2-socket server nodes based on 2nd Gen Intel Xeon Scalable processors with up to 48 cores per server node • Up to 1.5 TB of DDR4 memory per M5 server node and up to 1 TB of Intel Optane™ DC Persistent Memory • Support for high-performance Nonvolatile Memory Express (NVMe) and flash memory • Massive 1,080-TB data storage capacity that easily scales to petabytes with Cisco UCS Manager software • Policy-based storage management framework for zero-touch capacity on demand • Dual-port 40-Gbps system I/O controllers with a Cisco UCS Virtual Interface Card 1300 platform embedded chip or PCIe-based system I/O controller for Quad Port 10/25G Cisco VIC 1455 or Dual Port 40/100G Cisco VIC 1495 or 3rd party PCIe adapters • Unified I/O for Ethernet or Fibre Channel to existing NAS or SAN storage environments • Support for Cisco bidirectional transceivers, with 40-Gbps connectivity over existing 10-Gbps cabling infrastructure Cisco UCS S3260 Storage Server datasheet (Page 3) Source: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/datasheet-c78-738059.pdf

Table 1.   Product specifications

Item	Description
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Processor cores	Up to 48 per server node
Memory	M5 server node: 7 Dual In-Line Memory Module (DIMM) slots per processors with 16-GB, 32-GB, 64-GB, or 128-GB DDR4 registered DIMMs (RDIMMs) or Load-Reduced DIMMs (LRDIMMs). 1 Intel Optane DC Persistent Memory Ready Slot with 256-GB or 512-GB.
NVMe	Up to 12.8 TB NVMe for M5 server node
System I/O controllers	Up to 2 system I/O controllers. Choice of • Onboard Cisco UCS Virtual Interface Card 1300 platform and 2 x 40-Gbps Quad Small Form-factor Pluggable (QSFP) ports (160 Gbps of throughput) • PCIe Slot based with choice of Cisco UCS VIC 1455 Quad Port 10/25G, Cisco UCS VIC 1495 Dual Port 40/100G, or third-party Ethernet and FC Adapters
I/O expansion module	• Dual x8 Peripheral Component Interconnect Express (PCIe) half-height, half-width slots for third-party add-in cards. (**Note:** Available with M5 and M4 server node; uses server bay 1.) • Choice of I/O Ethernet and Fibre Channel options: ◦ 1, 10 or 40 Gigabit Ethernet or 16-Gbps Fibre Channel • NVMe SSD options of 1.6-, 3.2-, or 6.4-TB • Application acceleration with support for NVIDIA T4 16GB GPU

Cisco UCS S3260 Storage Server datasheet (Page 5)
Source: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/datasheet-c78-738059.pdf

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Ethernet Port Mode

When you set the port mode to Ethernet, you can configure the following port types:

- Server ports

- Ethernet uplink ports

- Ethernet port channel members

- FCoE ports

- Appliance ports

- Appliance port channel members

- SPAN destination ports

- SPAN source ports

Cisco UCS Manager Storage Management Guide, Release 4.0 (page 10)
https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/ucs-manager/GUI-User-Guides/Storage-Mgmt/4-0/b_UCSM_GUI_Storage_Management_Guide_4_0.pdf

Cisco UCS S3260 comprises PCIe adapter for handling network control traffic

Capability/Feature	Description
Chassis	Four rack unit (4RU) chassis
Server Node	One or two M5 server nodes plug into the back of the chassis

	■ 2nd Generation Intel® Xeon® Scalable CPUs
	■ Up to fourteen 2933 DDR4 DIMMs (can be mixed with up to two PMem)
	■ Up to two 7 mm NVMe drives
	■ Choice of Storage Controller
	  • Dual-Chip RAID with 4GB Cache for each chip, or
	  • Dual-Chip Pass-Through
	■ One 1G Host Management Port
	■ One KVM console connector

System I/O Controller	The system can have one or two system I/O Controllers (SIOC). The SIOCs provide data and management connectivity.
	■ Management
	  • One 10/100/1000 Ethernet dedicated management port per SIOC
	■ Data
	  • SIOC with embedded VIC 1300 Series with dual Port 40Gb QSFP+ ports each, or
	  • SIOC with PCIe Adapter for VIC 1400 or 3rd Party Ethernet and Fiber Channel Adapters.

Cisco UCS S3260 Storage Server specsheet (Page 9)
Source: https://www.cisco.com/c/dam/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/s3260-specsheet.pdf

| a cache memory; | Cisco UCS S3260 comprises a cache memory

The Cisco UCS S3260 chassis is a modular architecture consisting of the following modules:

    (1) Base Chassis: contains eight redundant, hot-pluggable fans, and a rail kit.

    (2) Server Node: one or two UCS-S3260 M5 server nodes.

        ■ Each S3260 M5 server node has up to two I 2nd Generation Intel® Xeon® Scalable CPUs, up to 14 2933-MHz DDR4 DIMM or DC Persistent Memory (PMem) memory slots (with One slot per CPU for App Direct Mode and 2 per CPU for Memory mode), a dual-chip passthrough controller or a dual-chip RAID controller with dual 4 GB cache and up to two 7 mm NVMe SSDs.

Cisco UCS S3260 Storage Server specsheet (Page 5)
https://www.cisco.com/c/dam/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/s3260-specsheet.pdf |

BASE SERVER STANDARD CAPABILITIES and FEATURES

Table 1 lists the capabilities and features of the base server. Details about how to configure the server for a particular feature or capability (for example, number of processors, disk drives, or amount of memory) are provided in *CONFIGURING the SERVER, page 11.*

Table 1   Capabilities and Features

Capability/Feature	Description
Chassis	Four rack unit (4RU) chassis
Server Node	One or two M5 server nodes plug into the back of the chassis

	■ 2nd Generation Intel® Xeon® Scalable CPUs
	■ Up to fourteen 2933 DDR4 DIMMs (can be mixed with up to two PMem)
	■ Up to two 7 mm NVMe drives
	■ Choice of Storage Controller
	   • Dual-Chip RAID with 4GB Cache for each chip, or
	   • Dual-Chip Pass-Through
	■ One 1G Host Management Port
	■ One KVM console connector

Cisco UCS S3260 Storage Server specsheet (Page 5)
https://www.cisco.com/c/dam/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/s3260-specsheet.pdf

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front-end software for handling I/O requests arriving at the I/O channel adapter or the network adapter;	Cisco UCS S3260 comprises front-end software (Fibre Channel Adapter Policies) for handling I/O requests(I/O queues) arriving at the I/O channel adapter or the network adapter (Network and Management I/O); **Fibre Channel Adapter Policies** • IO TimeOut Retry—When the target device does not respond to an IO request within the specified timeout, the FC adapter cancels the pending command then resends the same IO after the timer expires The FC adapter valid range for this value is 1 - 59 seconds. The default IO retry timeout is 5 seconds. This feature only works with Cisco UCS Manager version 3.1(2) and higher. Cisco UCS Manager Storage Management Guide, Release 4.0 (page 64) https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/ucs-manager/GUI-User-Guides/Storage-Mgmt/4-0/b_UCSM_GUI_Storage_Management_Guide_4_0.pdf

	Storage Server Features and Components Overview **Storage Server Features** The following table summarizes the Cisco UCS S3260 system features: *Table 9: Cisco UCS S3260 System Features* | Feature	Description
RAID Backup	The supercap power module (SCPM) mounts to the RAID controller card.
PCIe I/O	The optional I/O expander provides two 8x Gen 3 PCIe expansion slots.
Network and Management I/O	The system can have one or two system I/O controllers (SIOCs). These provide rear-panel management and data connectivity. • Two SFP+ 40 Gb ports each SIOC. • One 10/100/1000 Ethernet dedicated management port on each SIOC. The server nodes each have one rear-panel KVM connector that can be used with a KVM cable, which provides two USB, one VGA DB-15, and one serial DB-9 connector. | Cisco UCS Manager Storage Management Guide, Release 4.0 (page 166) https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/ucs-manager/GUI-User-Guides/Storage-Mgmt/4-0/b_UCSM_GUI_Storage_Management_Guide_4_0.pdf
cache manager software, responsive to said front-end software, for handling	IBM FlashSystem comprises cache manager software (cache mode, cache policy), responsive to said front-end software, for handling data stored in said cache memory;

data stored in said cache memory; and	**Step 6** In the **Virtual Drive Properties** area, update the following properties: | Name	Description
Virtual Drive Name field	The name of the new virtual drive you want to create.
Read Policy drop-down list	The read-ahead cache mode.
Cache Policy drop-down list	The cache policy used for buffering reads.
Strip Size drop-down list	The size of each strip, in KB. | Cisco UCS C-Series Integrated Management Controller GUI Configuration Guide for S3260 Storage Servers, Release 3.0 (190) Source: https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/sw/gui/config/guide/3_0/b_Cisco_UCS_C-Series_GUI_Configuration_Guide_for_C3x60_Servers_301.pdf responsive to said front-end software, for handling data stored in said cache memory (data is stored in the cache)

Name	Description
Write Policy drop-down list	This can be one of the following • **Write Through**— Data is written through the cache and to the physical drives. Performance is improved, because subsequent reads of that data can be satisfied from the cache. • **Write Back**— Data is stored in the cache, and is only written to the physical drives when space in the cache is needed. Virtual drives requesting this policy fall back to **Write Through** caching when the BBU cannot guarantee the safety of the cache in the event of a power failure. • **Write Back Bad BBU**—With this policy, write caching remains **Write Back** even if the battery backup unit is defective or discharged.
Disk Cache Policy drop-down list	This can be one of the following • **Unchanged**— The disk cache policy is unchanged. • **Enabled**— Allows IO caching on the disk. • **Disabled**— Disallows disk caching.

Cisco UCS C-Series Integrated Management Controller GUI Configuration Guide for S3260 Storage Servers, Release 3.0 (191)
Source:
https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/sw/gui/config/guide/3_0/b_Cisco_UCS_C-Series_GUI_Configuration_Guide_for_C3x60_Servers_301.pdf

back-end software, responsive to said configuration manager software, for handling	back-end software, responsive to said configuration manager software, for handling reads and writes to disks (Data is written to the physical drives) corresponding to the I/O requests

reads and writes to disks corresponding to the I/O requests but without communication over the I/O channel adapter, thereby separating disk operations from network and I/O traffic.	 | Name	Description
Write Policy drop-down list	This can be one of the following • **Write Through**— Data is written through the cache and to the physical drives. Performance is improved, because subsequent reads of that data can be satisfied from the cache. • **Write Back**— Data is stored in the cache, and is only written to the physical drives when space in the cache is needed. Virtual drives requesting this policy fall back to **Write Through** caching when the BBU cannot guarantee the safety of the cache in the event of a power failure. • **Write Back Bad BBU**—With this policy, write caching remains **Write Back** even if the battery backup unit is defective or discharged.
Disk Cache Policy drop-down list	This can be one of the following • **Unchanged**— The disk cache policy is unchanged. • **Enabled**— Allows IO caching on the disk. • **Disabled**— Disallows disk caching. | Cisco UCS C-Series Integrated Management Controller GUI Configuration Guide for S3260 Storage Servers, Release 3.0 (191) Source: https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/sw/gui/config/guide/3_0/b_Cisco_UCS_C-Series_GUI_Configuration_Guide_for_C3x60_Servers_301.pdf Source: https://www.redbooks.ibm.com/

	without communication over the I/O channel adapter, thereby separating disk operations from network and I/O traffic. (via a communication path (from M5 Node to storage) that is distinct from the I/O channel and network (from host to M5 Node))
	
	The Cisco UCS S3260 chassis is a modular architecture consisting of the following modules:
	
	   (1) **Base Chassis:** contains eight redundant, hot-pluggable fans, and a rail kit.
	
	   (2) **Server Node:** one or two UCS-S3260 M5 server nodes.
	
	      ■ Each S3260 M5 server node has up to two I 2nd Generation Intel® Xeon® Scalable CPUs, up to 14 2933-MHz DDR4 DIMM or DC Persistent Memory (PMem) memory slots (with One slot per CPU for App Direct Mode and 2 per CPU for Memory mode), a dual-chip passthrough controller or a dual-chip RAID controller with dual 4 GB cache and up to two 7 mm NVMe SSDs.
	
	Cisco UCS S3260 Storage Server specsheet (Page 3)
	https://www.cisco.com/c/dam/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/s3260-specsheet.pdf

2. The system of claim 1 wherein the computers comprise off-the-shelf hardware and operating systems and further comprise:	The computer comprise off-the-shelf hardware

an adapter I/O software for accepting incoming I/O requests from a host; and a volume access table employed by the configuration manager to ensure consistency of data stored on the network.	**Product overview** The Cisco UCS® S3260 Storage Server (Figure 1) is a modular, high-density, high-availability, dual-node storage- optimized server well suited for service providers, enterprises, and industry-specific environments. It provides dense, cost-effective storage to address your ever-growing data needs. Designed for a new class of data-intensive workloads, it is simple to deploy and excellent for applications for big data, data protection, software-defined storage environments, scale-out unstructured data repositories, media streaming, and content distribution. **Figure 1.** Cisco UCS S3260 Storage Server Cisco UCS S3260 Storage Server datasheet (Page 4) Source: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/datasheet-c78-738059.pdf The computers comprise off-the-shelf operating systems

STEP 14   SELECT OPERATING SYSTEM AND VALUE-ADDED SOFTWARE

For more details on supported operating systems and software for this server, see the Hardware & Software Compatibility List (HCL).

Note: PIDs tagged with an asterisk (*) are resell of an OEM vendor's support. They are required to be added to the associated Product License PID.

Select

■ Operating System (*Table 32*)

Table 32   Operating System

Product ID (PID)	PID Description
Microsoft Windows Server	
MSWS-19-DC16C	Windows Server 2019 Data Center (16 Cores/Unlimited VMs)
MSWS-19-DC16C-NS	Windows Server 2019 DC (16 Cores/Unlim VMs) - No Cisco SVC
MSWS-19-ST16C	Windows Server 2019 Standard (16 Cores/2 VMs)
MSWS-19-ST16C-NS	Windows Server 2019 Standard (16 Cores/2 VMs) - No Cisco SVC
MSWS-22-ST16C	Windows Server 2022 Standard (16 Cores/2 VMs)
MSWS-22-ST16C-NS	Windows Server 2022 Standard (16 Cores/2 VMs) - No Cisco SVC
MSWS-22-DC16C	Windows Server 2022 Data Center (16 Cores/Unlimited VMs)
MSWS-22-DC16C-NS	Windows Server 2022 DC (16 Cores/Unlim VMs) - No Cisco SVC
Red Hat	
RHEL-2S2V-1A	Red Hat Enterprise Linux (1-2 CPU,1-2 VN); 1-Yr Support Req
RHEL-2S2V-3A	Red Hat Enterprise Linux (1-2 CPU,1-2 VN); 3-Yr Support Req
RHEL-2S2V-5A	Red Hat Enterprise Linux (1-2 CPU,1-2 VN); 5-Yr Support Req
VMware	

Cisco UCS S3260 Storage Server specsheet (Page 49)
https://www.cisco.com/c/dam/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/s3260-specsheet.pdf

The computer comprises an adapter I/O

BASE SERVER STANDARD CAPABILITIES and FEATURES

Table 1 lists the capabilities and features of the base server. Details about how to configure the server for a particular feature or capability (for example, number of processors, disk drives, or amount of memory) are provided in *CONFIGURING the SERVER, page 11*.

Table 1 Capabilities and Features

Capability/Feature	Description
Chassis	Four rack unit (4RU) chassis
Server Node	One or two M5 server nodes plug into the back of the chassis
	■ 2nd Generation Intel® Xeon® Scalable CPUs ■ Up to fourteen 2933 DDR4 DIMMs (can be mixed with up to two PMem) ■ Up to two 7 mm NVMe drives ■ Choice of Storage Controller • Dual-Chip RAID with 4GB Cache for each chip, or • Dual-Chip Pass-Through ■ One 1G Host Management Port ■ One KVM console connector
System I/O Controller	The system can have one or two system I/O Controllers (SIOC). The SIOCs provide data and management connectivity. ■ Management • One 10/100/1000 Ethernet dedicated management port per SIOC ■ Data • SIOC with embedded VIC 1300 Series with dual Port 40Gb QSFP+ ports each, or • SIOC with PCIe Adapter for VIC 1400 or 3rd Party Ethernet and Fiber Channel Adapters.

Cisco UCS S3260 Storage Server specsheet (Page 9)
https://www.cisco.com/c/dam/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/s3260-specsheet.pdf

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	An adapter I/O software for accepting incoming I/O requests from a host
	<table><tr><td>UCS Manager</td><td>UCSM 3.2.3 is required to manage S3260 M5 Server Node using 6200 and 6300 Fabric Interconnects UCSM 4.0(1) when SIOC with PCIe Adapter installed UCSM 4.0(4x) supports App Direct Mode and memory mode (see *Table 8 on page 17*) **Note:** Connectivity with FI 6324 not supported at this time</td></tr></table> Cisco UCS S3260 Storage Server specsheet (Page 10) Source: https://www.cisco.com/c/dam/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/s3260-specsheet.pdf a volume access table (pre-assign storage-access policies to storage resources) employed by the configuration manager to ensure consistency of data stored on the network. Storage access – Cisco UCS system provides consolidated access to both SAN storage and Network Attached Storage over the unified fabric. This provides customers with storage choices and investment protection. Also, the server administrators can pre-assign storage-access policies to storage resources, for simplified storage connectivity and management leading to increased productivity. Cisco UCS S3260 Storage Servers with Cohesity DataPlatform(Page 8) Source: https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/UCS_CVDs/ucs_s3260_cohesity_dataplatform.pdf?dtid=osscdc000283
3. The system of claim 1 wherein the cache memory comprises a	The cache memory comprises a portion of a distributed cache memory stored in the computers(Server Nodes) interconnected by the network.

portion of a distributed cache memory stored in the computers interconnected by the network.	**Storage Server Components** **Server Nodes** The Cisco UCS S3260 system consists of one or two server nodes, each with two CPUs, DIMM memory of 128, 256, or 512 GB, and a RAID card up to 4 GB cache or a pass-through controller. The server nodes can be one of the following: • Cisco UCS S3260 M3 Server Node • Cisco UCS S3260 M4 Server Node—This node might include an optional I/O expander module that attaches to the top of the server node. Cisco UCS Manager Storage Management Guide, Release 4.0 (page 169) https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/ucs-manager/GUI-User-Guides/Storage-Mgmt/4-0/b_UCSM_GUI_Storage_Management_Guide_4_0.pdf
4. The system of claim 3 further comprising a volume access table employed by the configuration manager to ensure consistency of data stored in the distributed cache.	The system comprises a volume access table (pre-assign storage-access policies to storage resources) employed by the configuration manager to ensure consistency of data stored on the network. Storage access – Cisco UCS system provides consolidated access to both SAN storage and Network Attached Storage over the unified fabric. This provides customers with storage choices and investment protection. Also, the server administrators can pre-assign storage-access policies to storage resources, for simplified storage connectivity and management leading to increased productivity. Cisco UCS S3260 Storage Servers with Cohesity DataPlatform(Page 8) Source: https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/UCS_CVDs/ucs_ s3260_cohesity_dataplatform.pdf?dtid=osscdc000283

| 5. The system of claim 4, wherein the configuration manager includes software that checks an access mode in the volume access table and (i) if the access mode is set to an exclusive mode, causes both reads and writes to be stored in the cache memory, and causes invalidate messages to be sent to remote storage systems; (ii) if the access mode is set to shared, causes only reads to be stored in the cache memory; and (iii) if the access mode is set to a value other than exclusive or shared, causes reads and writes to be performed directly to a disk without using the cache memory. | The system comprises the configuration manager includes software that checks an access mode

Dedicated (exclusive mode), shared, Unssigned (other than exclusive mode and shared mode)

Disk Sharing for High Availability

Disk Zoning Policies

You can assign disk drives to the server nodes using disk zoning. Disk zoning can be performed on the controllers in the same server or on the controllers on different servers. Disk ownership can be one of the following:

Unassigned

Unassigned disks are those not visible to the server nodes.

Dedicated

If this option is selected, you will need to set the values for the for the disk slot.

Note   A disk is visible only to the assigned controller.

Shared

Shared disks are those assigned to more than one controller. They are specifically used when the servers are running in a cluster configuration, and each server has its storage controllers in HBA mode.

Cisco UCS Manager Storage Management Guide, Release 4.0 (page 173)
https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/ucs-manager/GUI-User-Guides/Storage-Mgmt/4-0/b_UCSM_GUI_Storage_Management_Guide_4_0.pdf |

6. A method of accessing a remote disk over a computer network without incurring network overhead, the method comprising the steps of: a. causing a local host to issue a request over an I/O channel to a local computer;	Cisco UCS S3260 provide a method of accessing a remote disk over a computer network without incurring network overhead. (it is a computer (server) that suitable for use in a data storage system) **Product overview** The Cisco UCS® S3260 Storage Server (Figure 1) is a modular, high-density, high-availability, dual-node storage- optimized server well suited for service providers, enterprises, and industry-specific environments. It provides dense, cost-effective storage to address your ever-growing data needs. Designed for a new class of data-intensive workloads, it is simple to deploy and excellent for applications for big data, data protection, software-defined storage environments, scale-out unstructured data repositories, media streaming, and content distribution. **Figure 1.** Cisco UCS S3260 Storage Server Cisco UCS S3260 Storage Server datasheet (Page 4) Source: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/datasheet-c78-738059.pdf Cisco UCS S3260 causes a local host to issue a request over an I/O channel to a local computer (Cisco UCS S3260 comprises an I/O channel (Fibre Channel) for accepting an incoming I/O request from a hostes)

	Product highlights • Dual 2-socket server nodes based on 2nd Gen Intel Xeon Scalable processors with up to 48 cores per server node • Up to 1.5 TB of DDR4 memory per M5 server node and up to 1 TB of Intel Optane™ DC Persistent Memory • Support for high-performance Nonvolatile Memory Express (NVMe) and flash memory • Massive 1,080-TB data storage capacity that easily scales to petabytes with Cisco UCS Manager software • Policy-based storage management framework for zero-touch capacity on demand • Dual-port 40-Gbps system I/O controllers with a Cisco UCS Virtual Interface Card 1300 platform embedded chip or PCIe-based system I/O controller for Quad Port 10/25G Cisco VIC 1455 or Dual Port 40/100G Cisco VIC 1495 or 3rd party PCIe adapters • Unified I/O for Ethernet or Fibre Channel to existing NAS or SAN storage environments • Support for Cisco bidirectional transceivers, with 40-Gbps connectivity over existing 10-Gbps cabling infrastructure Cisco UCS S3260 Storage Server datasheet (Page 3) Source: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/datasheet-c78-738059.pdf
b. providing a configuration manager on the local computer, the configuration manager routing the request to a remote computer via the computer network;	Cisco UCS S3260 provids a configuration manager on the local computer (Unified I/O) for Ethernet for network traffic(Ethernet)

	Product highlights - Dual 2-socket server nodes based on 2nd Gen Intel Xeon Scalable processors with up to 48 cores per server node - Up to 1.5 TB of DDR4 memory per M5 server node and up to 1 TB of Intel Optane™ DC Persistent Memory - Support for high-performance Nonvolatile Memory Express (NVMe) and flash memory - Massive 1,080-TB data storage capacity that easily scales to petabytes with Cisco UCS Manager software - Policy-based storage management framework for zero-touch capacity on demand - Dual-port 40-Gbps system I/O controllers with a Cisco UCS Virtual Interface Card 1300 platform embedded chip or PCIe-based system I/O controller for Quad Port 10/25G Cisco VIC 1455 or Dual Port 40/100G Cisco VIC 1495 or 3rd party PCIe adapters - Unified I/O for Ethernet or Fibre Channel to existing NAS or SAN storage environments - Support for Cisco bidirectional transceivers, with 40-Gbps connectivity over existing 10-Gbps cabling infrastructure Cisco UCS S3260 Storage Server datasheet (Page 3) Source: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-s-series-storage-servers/datasheet-c78-738059.pdf
c. causing the remote computer to check the request against a volume access table;	a volume access table (pre-assign storage-access policies to storage resources) is checked Storage access – Cisco UCS system provides consolidated access to both SAN storage and Network Attached Storage over the unified fabric. This provides customers with storage choices and investment protection. Also, the server administrators can pre-assign storage-access policies to storage resources, for simplified storage connectivity and management leading to increased productivity. Cisco UCS S3260 Storage Servers with Cohesity DataPlatform(Page 8)

	Source: https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/UCS_CVDs/ucs_ s3260_cohesity_dataplatform.pdf?dtid=osscdc000283
d. causing the remote computer to perform an I/O operation on a disk located on the remote computer and to return data to the local computer; e. causing the local computer to provide the returned data to the local host via the I/O channel; and f. causing the local computer to check the data against the volume access table to ensure consistency of the data on the local and the remote computers.	causing the remote computer to perform an I/O operation on a disk located on the remote computer (remote access) Remote Clusters When multiple Cohesity systems are available across the landscape, such as multiple Cohesity VE virtual machines and other larger Cohesity clusters, the Cohesity systems can be registered with one another for both remote management and replication of backed up snapshots across the network. When remote access is enabled, the name of the Cohesity cluster or system in the upper left-hand corner of the Cohesity Dashboard screen becomes a selectable drop-down list. From this menu you can choose which connected remote or local Cohesity system to manage, without having to log in to each system separately. Cisco UCS S3260 Storage Servers with Cohesity DataPlatform(Page 130) Source: https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/UCS_CVDs/ucs_ s3260_cohesity_dataplatform.pdf?dtid=osscdc000283 causing the local computer to check the data against the volume access table to ensure consistency of the data on the local and the remote computers.

When replication between remote Cohesity systems or clusters is enabled, Cohesity policies allow for a secondary copy of the Protection Job snapshots to be replicated to a different Cohesity cluster, which can be located in a standby datacenter used for disaster recovery. This secondary Cohesity cluster can have a standby VMware vCenter server registered as a source, and backups can quickly be restored to this recovery system in case a disaster is declared, or a planned failover to the secondary system is required. In order to replicate snapshots, the originating cluster (i.e. the cluster which captures the snapshot) must register the receiving cluster, and in return, the receiving cluster must register the originating cluster. A pairing is established between Storage Domains in the two clusters. A single Storage Domain in the originating cluster is paired with a single Storage Domain in the receiving cluster. A many-to-one pairing can be done only across multiple originating clusters, each one pairing a single Storage Domain, but all of them paired with the same receiving Storage Domain. Replication frequency and retention is controlled as part of the Cohesity policies, which each Protection Job is then assigned to follow. Protection jobs which have been configured to replicate to a remote cluster will also appear as inactive jobs on the receiving Cohesity system. These inactive jobs can be failed over to the receiving system in case of a disaster, and a recovery job can then be initiated.

Cisco UCS S3260 Storage Servers with Cohesity DataPlatform(Page 131)

Source: https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/UCS_CVDs/ucs_s3260_cohesity_dataplatform.pdf?dtid=osscdc000283